

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Terminal With a Difference

This sleek terminal with the CRT mounted on the right is part of a new line announced by Olivetti Underwood Corp. The TCV 250A is part of the TC line of on-line, real-time equipment which includes printing terminals, point of sale recorders, and a serial printer. Both general purpose and specialized models are available.

IBM Announces Compilers For New Standard Cobol

ATLANTIC CITY, N.J. - A series of USA Standard Cobol compilers, using a minimum of 54K core (80KB if a report writer is included), has been announced for delivery within the year by IBM.

The announcement, the major event during the preliminary meetings before the Guide/Share merged meeting opened here Oct. 30, included details of language conversion programs designed to provide 95% conversion from the current 360 Cobol compilers, manuals which differentiate (by gray shading) between language facilities which are in the USA Standard Cobol and those which

are extensions provided by IBM, and details of the phasing out of the support to be given to users of the current IBM Cobol F compiler.

Two Compiler Families

Two compiler families are being implemented, one for the Disk Operating System, and one for the Operating System. At the highest level they will include all eight of the modules of the standard Cobol. The minimum DOS compiler will require 54KB, or 80KB if the report writer is used. The minimum for the OS compiler is 80KB. Segmentation, key, word abbreviations, and nonstandard label handling are some of the features of the compilers.

DOS users will be able to have a sort facility, implied subjects and operators, and an extended source library facility over and above the facilities currently available. Most of the facilities are already in the OS version, but more flexibility will be provided.

Cobol F Phase-Out

The current D compiler (in DOS) and E compiler (in OS) are not affected by the move. The Cobol F compiler is being dropped, but IBM will maintain the compiler for two years after the USASI compilers are released, and will check that the compiled programs produced by the F com-

(Continued on Page 15)

\$80/Mo. Unit Mates Data Recorders, 360s

By a CW Staff Writer

HERKIMER, N.Y. - An \$80 a month interface with the System 360 has been announced by Mohawk Data Systems, apparently specifically directed to the disk-only and 1600 bpi tape users. Currently these installations have been unable to use input created by key to tape units such as those pioneered by Mohawk and now manufactured by many companies.

With the new unit, called an MDS 3600 Controller, Mohawk reckons that 360 users can read 160 character records at a rate of up to 800 a minute, and write them at up to 270 a minute using Mohawk supplied software. The company points out that these speeds compare favorably with high speed card equipment, and at lower cost. Actual speeds depend on the type of data recorder which is used (see table).

Operations

The MDS 3600 controller connects to the multiplexer channel on the one side, and to one or two Mohawk Data Recorders on the other side. Reading or writing is controlled by macros which include error recovery procedures. A manual switch, not under computer control, selects which data recorder is to be used, and taking the recorder either on-line or off-line does not affect the operations of other units on the channel.

Compatible Tapes Unneeded

From the user's standpoint, this removes the need for having the same density tape units on the computer as on the data recorders. Formerly this need was implied because the method of use of the recorder was simply to mount the tape on a standard tape unit.

SPEEDS WITH THE 3600:	DATA-RECORDER SERIES		
	1100 (80 char/rec)	6400 (80 char/rec)	6400 (160 char/rec)
Write (records/minute)	350	320	270
Read (records/minute)	1000	950	800

Input and output speeds using MDS 3600

It also provides an ability to use the growing key to tape input methods on disk-only systems without going to the expense of buying a special tape unit or of using a computer assisted system which can prepare disk packs. In some ways, it appears to represent direct competition for the announced IBM Model 50 Data Inscrubers with their Model 2495 reader units.

Mohawk also announced a new

7500 System, designed to provide flexibility at remote terminal sites. This allows the terminal to be supplemented with a 300 lpm printer (\$490/month), a 300 cpm Card Reader (\$65/month), and a 200 cpm card punch (\$495/month), as well as having the normal tape drive. Delivery for both the MDS 3600 controller and the MDS 7500 system is scheduled for January.

IBM Rescinds All Changes In Maintenance Charges

WHITE PLAINS, N.Y. - IBM has withdrawn both the increases and reductions in maintenance charges which it announced last week. The key point for the withdrawal was the fact that, as reported in last week's *Computerworld*, many leasing companies have entered into fixed price contracts which include maintenance. IBM explained that it was not aware of the terms of these contracts because they were between the leasing companies and their customers.

The changes were on a unit by unit basis, but appeared to increase the charges for modern equipment while decreasing it for older equipment.

For instance, most System 360

charges were increased 20%, while the IBM 7000 series maintenance charges went down 20%. An IBM spokesman confirmed to *Computerworld* that the company had withdrawn the reductions as well as the increases.

"The company will continue to study maintenance and rental charges, purchase prices, and the relationships among them," he said when asked if the company was considering the position of those of its users who had been notified of reduced maintenance charges, based on a unit by unit study, and who were now faced with cancellation of the promised reductions because of equipment with which they were not involved.

Decision on PL/1 Standard Postponed

Special to Computerworld

NEW YORK - The USA Standards Institute X3 Committee meeting, chaired by Bema's Charles Phillips here last week, tabled until January 23rd any discussion of the recommendation that a task force be appointed to prepare a draft USA PL/1 standard.

As reported in *Computerworld* [Oct. 23], the National Bureau of Standards, as well as some of the computer hardware manufacturers, have been opposing the appointment of such a task group at this time but so far have been unable to sway the appropriate committees. X3 is the senior technical standardization committee

for data processing matters and, as such, represented their last opportunity to present their objections.

Standardization officials, commenting on *Computerworld's* coverage of the X3.4 meeting [CW, Oct. 23], pointed out that *Computerworld* was wrong in stating that a "consensus," rather than just a simple majority, was usual for standardization decisions. Consensus, as used, meant approval by most of those voting.

In fact, while a consensus is the approved method for senior committees, such as X3, only a simple majority is required by USASI operating procedures for junior committees. Therefore, Chairman Tom Steele's action in breaking the 7-7 tie was in order.

AT&T Revises the Revised Tariffs, Further Eases Attachments Ban

By a CW Staff Writer

NEW YORK - The American Telephone & Telegraph Co. has filed proposed tariff changes with the Federal Communications Commission that would provide for the connection of customer

owned communications systems and channels to the public telephone network after Jan. 1.

The new tariffs are an expansion of tariff revisions filed in September that provided for the connec-

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On the Inside

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A generation which talks your language



With fourth generation computers, the user is free at last from traditional hardware, language limitations. He can adapt the logic design of his machine to optimize the system for differing types of problems. The secret is micro-programming. It is the basic reason for the tremendous improvement in cost-performance ratio over a broad area of computer applications. Machine language independence and problem adaptability make fourth generation computers extremely versatile and remarkably economical. These computers embody all the technical advancements of third generation machines and then some.

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Editorials

Competition Should Be Responsible

IBM's action in withdrawing its recently announced increases in maintenance charges is to be commended. Cancellation of the reduced maintenance charges for the 1400 and 7000 series, which also results from its action, will presumably have to be looked into further, but even with this caveat, this week's prompt action was undoubtedly a good thing.

Similar praise is hardly appropriate, however, for those leasing companies who have proceeded to build into their contracts a guarantee of unchanging maintenance rates without providing themselves with adequate in-house maintenance facilities. Competition is a fine thing, but it should be done responsibly and not by trading on any assumed requirement that IBM must shelter everyone under its umbrella.

Let Just Users In!

One of the most startling statistics to come into these offices recently showed that the total membership of Share, the group representing users of large IBM equipment, was under 1000. This was startling because we know of a number of individual system installations which are used by more than 1000 people! Indeed, we know one, admittedly not an IBM system but in the same general category, which has had over 100 users connected simultaneously! All of which makes the Share membership figure look very unrepresentative.

The explanation, of course, lies in the fact that a user as such is not entitled to join Share. Membership is reserved to one or two representatives per installation, and there are certain restrictions even then. This may have seemed reasonable 10 years ago, but now seems rather irrelevant.

Computerworld feels that if a group such as Share is to be truly an organization which represents the best interests of the principal users of a class of computers, it should let these very users participate.



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Moving Up?

Watch Out for the Glitches!

A common task faced by computer people is moving upward within the same family of computers. It may involve getting more equipment to allow using the present system in parallel. It may simply involve moving up to a new form of the operating system. One thing is almost certain. You will be told that it is simple to move up within the language.

And it is. But there are problems. You need to know where to obtain advice, and what information is needed.

The key item is knowing that the new system may have idiosyncrasies that may not be documented.

Unique Problems

There are operating systems running today whose users have encountered hundreds of problems unique to a particular operating system. There is a distinct possibility there may be an operation you can perform on your lower level system that you will not be able to perform on the senior one — because there is some form of "glitch" that does not work. There is another reason why your programs may not work. There may be an area in your records, or your labels, which isn't used in your lower level operating system but which is used for some purpose in the higher one.

When the user comes to do his operations, he will find that a program which runs quite validly on the small system doesn't work on the large one, and he will need help. One user recently went through such a move and eventually spent three and one-half months on what appeared to be a routine operation. He recommends that a period of at least a month be allowed for any conversion, no matter

how well organized, and he recommends very careful organization.

His particular conversion was from a Basic Operating System to a Disk Operating System to sufficiently make use of a single disk drive. His installation had a very good knowledge of the Basic Operating System but only a theoretical knowledge of the Disk Operating System, and there is where the problems started.

Getting Organized

"First of all, select a number of test programs for every part of your installation," he says. "Then, start trying to convert these. Study the official differences between the two operating systems. These are available from the manufacturer. Obtain a current list of all the problems known to exist in the new system, and examine them one by one to see if they will affect any of your tests. There is nothing more frustrating than searching for days or even weeks to find a bug in a program which works perfectly on your old system, and find that it is something that needs only a temporary fix in a new one."

In general, the advanced warnings associated with the new operating systems should be checked very carefully, preferably by an expert. He will recognize the problems more quickly than someone not familiar with the problems.

After the tests have been completed satisfactorily, then an actual conversion for the main programs should be put into effect. "It is not good to start the main conversion when you do not really know what the thing looks like," was the advice given from experience.

Letters to the Editor

Software Pricing

To the Editor:

In the Sept. 18 issue of *Computerworld*, an IBM executive was quoted as saying, "Because software represents only about 2% of the total system cost . . . , separate software pricing would not be in the interest of users." Although I do not see how the former implies the latter, the original statement is difficult to believe. It echos similar statements made at a recent Los Angeles Chapter ACM Meeting (September) upon which some equally preposterous implications were drawn.

In the first place, it is impossible to ascertain the cost of IBM software to date because it is not yet in acceptable condition for operation of most computer installations. Of far more importance, however, is the fact that separate pricing of hardware and software involves the ratio of software costs to hardware costs, not the ratio of software costs to all costs. Spokesmen on the subject often seem to miss this point.

IBM has many expenses besides hardware and software. These include the expenses of marketing, real estate, and other administrative costs. Even more directly related to hardware and software are the burden items of maintenance, field service, training, and documentation. I suspect that IBM itself is not aware of its software costs. There is evidence which suggests that a higher portion of these burden items are associated with software than with hardware.

It must also be realized that to recover the costs of software, these total costs must be amortized over the number of sales expected and a profit added to

the result. Even accepting the 2% figure (I don't) and assuming every computer customer purchases the software, for a half million dollar computer (e.g., medium scale 360 Mod 30) this results in \$10,000 for software. However, since there are certain software modules supplied by IBM that most customers would not buy at any price, it is unrealistic to amortize the software over all hardware sales.

The real cost to the user, however, is the cost of operating with inefficient software produced in an environment free of competition. Software can be sold against software supplied "free" when that software represents a lower total operating cost to the user. This is a market in which many software firms are happy to compete.

Separate pricing of software and hardware is inevitable, not because of antitrust action or patent legislation, but because it makes more sense economically. The software industry must produce programs which represent a real cost savings to the consumer through faster operation and by reducing the configuration required for a given operation. The hardware manufacturer is not motivated to do so, and the customer picks up the tab.

David E. Ferguson
President

Programatics
Los Angeles

ACM Ethics Petition

To the Editor:

Regarding your petition calling for a vote on ACM ethics [CW, Oct. 9]:

Both the petition and the issue which triggered it are nit-picking

trivia. *Computerworld* has performed and can perform a valid watchdog service to the computing community, but it has an obligation to keep its watchdog activities above the level of political machinations.

Keep up the jabbing, continue to be a watchdog, but be on solid ground when you do.

Robert L. Glass
Kent, Wash.

User Groups

To the Editor:

I just read your Oct. 16 issue, and was particularly surprised that in your article on 360/20 user groups, you failed to mention Guidance, which has been a rapidly moving organization since January of 1968.

The group, like Roaring Twenties and the others, was set up in response to a common need for information interchange among small systems (not necessarily IBM's) users, an exchange which is too specific to be provided by the much larger (and larger oriented) groups such as Common, Share, and Guide.

If any of your readers are interested in more information, please write to Guidance, P.O. Box 537, Lake Ronkonkoma, N.Y.

Leo Fauvel
Secretary

Guidance
Lake Ronkonkoma, N.Y.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, *Computerworld*, 60 Austin St., Newton, Mass. 02160

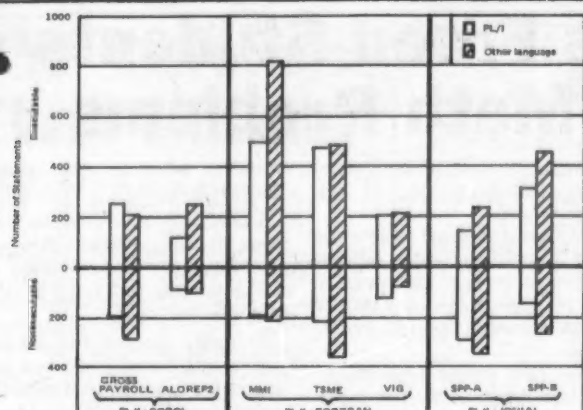


Figure 1. Program Size, in Source Statements. Comparison of the number of statements used to write the same programs in PL/I and the indicated comparison language. Note that generally PL/I programs use fewer statements.

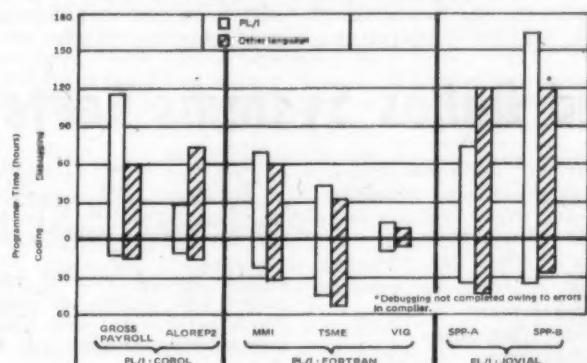


Figure 2. Programming Cost In Programmer Hours. Comparison of the number of programmer hours used in writing the same programs in PL/I and the indicated comparison languages. Note that no apparent trend in either direction exists.

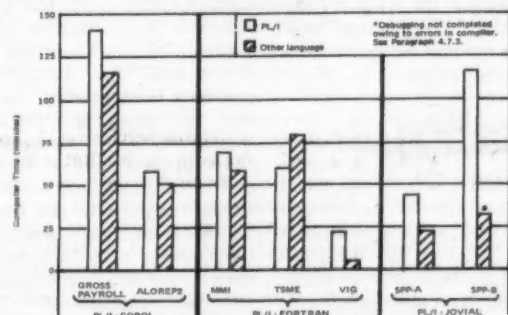


Figure 3. Programming Cost in Machine Time. Comparison of the amount of machine time expended during programming the same programs in PL/I and the indicated comparison languages. Note that PL/I took more computer time in all except one case.

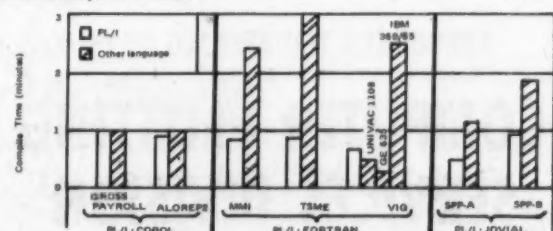


Figure 4. Compile Speed. Comparison of the compile speed of PL/I with the compile speeds when the same programs were written in the indicated comparison language. Note that PL/I takes the same time as Cobol, less than Fortran on the 360/65 but longer than Fortran on Univac and GE systems, and less than Jovial.

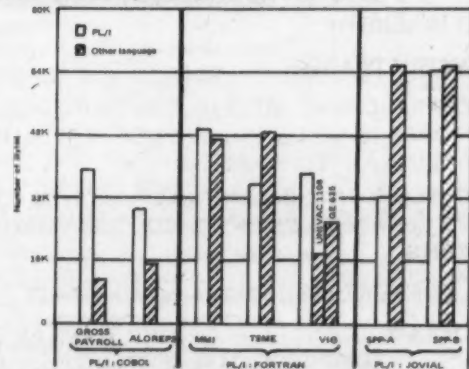


Figure 5. Programming Efficiency in Core Utilization. Comparison of core utilization of the same programs in PL/I and the indicated comparison language. Note that PL/I took more core in both Cobol cases, and two out of the three Fortran cases. By contrast, it took less core in both Jovial cases.

Rubey Report - Part I

A Look Behind the Conclusions

Last month *Computerworld* covered just the highlights of the recently released Rubey Report, "Comparative Evaluation of PL/I," in a news story headed "PL/I Error-Prone, Hard To Learn, Air Force Told" [CW, Oct. 9]. Since then *Computerworld's* coverage has been criticized as being out of line with the overall impression to be gained from reading the Study Results section of the report. Accordingly we retraced our steps, reread the entire 283 page report (which we had done earlier, rather than just relying on the study results), and came up with the unanticipated conclusion that our coverage was indeed not in accordance with the study results reported, but that it was in accordance with the data on which those results were supposed to be based! In fact, we decided that we disagreed with the interpretation Raymond Rubey and his collaborators placed on their data.

As a result, we decided that we would place the facts found by Rubey before our readers, along with our interpretations of them and those set forth in the report. This will take four weeks to complete, but we think that you will be interested — and rather surprised.

The basic set of facts with which the Rubey Report concerned itself consisted of observations made while seven professional programmers, all with math degrees and all with a background in scientific programming, wrote and debugged seven programs in PL/I and in one of the "standard" high level languages (Cobol, Fortran, or Jovial). These observations were designed to eliminate many background effects, and *Computerworld* agrees with the writers of the report that they probably did.

Source Statements

The first diagram shows the size of the programs, as expressed in source statements. It is quite noticeable that PL/I does use significantly fewer statements in all cases. The report comments that PL/I statements used in the test tend to be longer than statements used in comparison languages. However, the additional length is only about 10% and so is not significant.

Programming Cost

The next two diagrams show the cost of writing the programs, expressed in programmer hours and in the amount of computer time used to check the programs. In *Computerworld's* opinion no generalization about programmer productivity can be made from an analysis of the number of programmer hours used. The PL/I programs took significantly longer to write as often as they took significantly less time. However, the same is not true of the second graph of programming costs. In five out of the six pairs of programs completed, more computer time was used to check the PL/I version than was used to check the comparison version. This is clearly a significant fact. It means that the cost of programming in PL/I will tend to be higher than the cost of programming in the comparison languages.

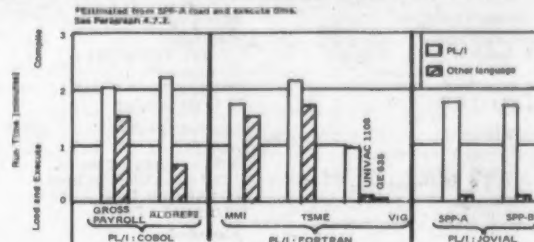


Figure 6. Programming Efficiency Measured by Execution Speed. Comparison of the execution efficiency of the same programs when written in PL/I and the indicated comparison language. Note that PL/I programs took longer in all cases.

PL/I Faster Compile Time

The next diagram shows the compile time used for various programs. It can be seen that a single compile time is significantly less for the PL/I compilation than for the comparison languages. However, this saving in compile time is lost because of the greater number of recompiles needed to complete the PL/I programs as evidenced by the fact that the total amount of time used during program preparation was higher for PL/I in five out of six completed pairs of programs.

Core Space

The next chart shows the amount of core used by each program. A new variable enters the picture here. One of the small Fortran programs was programmed and run on non-IBM equipment, specifically the GE 635 and the Univac 1108.

The original intention had been to run programs on different systems, but this was the only case in which the programs were run on non-IBM equipment. No direct comparison between the IBM and non-IBM core utilization was possible because the IBM Fortran compiler did not recognize the implied DO loops used by the programmer as did the Univac and GE.

The most noticeable result here is in PL/I versus Cobol. In both test cases the PL/I program took much more core than did the Cobol version. Averaging the two programs, it appears that for Cobol operations the PL/I test programs took double the core. No equivalent trend can be seen in the other two comparison cases, unless it can be regarded as significant that both the non-IBM systems used less core in their

Fortran versions than the IBM system used for the PL/I version.

Execution Time

The final chart shows the object time involved in executing the program (including loading). The results here appear to be among the most significant in the report. It shows that the object time performance in all completed cases was slowest when PL/I was used. Moreover, a clear language differential appeared. Fortran showed only a 10-20% improvement when run with IBM compilers on IBM equipment (although it should be noted that the non-IBM equipment ran the program nearly 10 times faster).

In business applications where Cobol was the test language, the improvement in execution time was greater — with the Cobol programs running 25-50% faster than the PL/I versions. Compared to Jovial, the PL/I programs were about 10 times slower!

Summary of Facts

These then were the facts produced by the survey. When professional programmers with math degrees were used, PL/I programs were observed to cost more, and to run slower than the standard language programs. They also used more core space in the business application area.

Despite these observed and reported facts, the Study Results section says, "Insofar as it was possible to determine within the scope of this study, PL/I provides capabilities for the efficient solution of problems in all of the application areas, at least to the same extent as the comparison languages."

Just how this statement can be made will be the subject of next week's article.

TLW Computerworld Corner

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Item 3: 1401 C4, 1402-1, 1403-2, 1406-1, 4-729 II's. Advanced Programming, Print Storage, Numerical Print, Hi-Lo Equal, and others. AVAILABLE 11/68.

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+ Under-computerized?
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Our research staff collected and analyzed statistics on the top 100 computer users among industrial companies in the United States. They operate almost half the computers, in value, used by all the country's industrials. We developed a set of measurement ratios for each company... and analyzed computer usage industry by industry. The resulting report, the EDP 100, has an easy-to-use format that can help you compare your company's use of computers with the leaders in your industry. It gives you another guideline in analyzing your company's computer equipment and future plans.

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Project Has Freed Students From Long Math Problems

NEW ORLEANS — A year old, federally funded project, "Problem Solving — Computer Style," frees high school students here from laborious math calculations.

Computing systems at John F. Kennedy and Martin Behrman Senior High Schools are continuing to close what School Superintendent Carl Dolce calls "the gap between skills of our graduating high school seniors and the expected abilities of incoming college freshmen."

The computer's initial role is enrichment of math, chemistry, and physics instruction. Plans call for expanding the enrichment

program to nonscience courses such as history, music, and sociology.

The project is geared to developing a student's initiative and creativity, increasing his appreciation for logical concepts instead of concentrating on manual arithmetic.

"Our first year's experience," said Mrs. Angeline Werner, supervisor of mathematics, "showed us there very definitely is an increase in initiative and creativity. Seniors involved worked problems through to their conclusion, analyzed the why and how, and began using the computer as a

problem solver in other courses they were taking."

The 92 seniors involved last year were all college bound individuals of average, or above average, intelligence and untrained in computer technology.

Students learned Fortran and wrote and tested their own programs for the IBM 1130 as well as using canned programs.

"A few wrote as many as 36 programs," Mrs. Werner reported. "And the problems sometimes came from courses other than the math or science class which the project originally included."

NCR Has Opened Dallas Systems Center

DALLAS — NCR has opened a new 20,000 sq. ft. regional systems center located at 6777 Oakbrook Blvd. The facilities are used for testing customer computer programs, providing backup equipment for customer user installations, presenting equipment demonstrations, and providing training for company and customer personnel. In addition to Texas, the center serves Arkansas,

Colorado, southwest Illinois, Kansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, western Tennessee, and parts of Utah and Wyoming. Joseph A. Morin has been appointed manager.

SDS Moves Education And Sales Center

LOS ANGELES — Scientific Data Systems has moved its western regional sales office and computer education center into new quarters at the Airport Freeway Center, 5250 Century Blvd. Sales and training personnel were previously located in Santa Monica.

General Automation Opens Waltham Office

ORANGE, Calif. — General Automation, Inc. has announced the opening of a new district sales office at 235 Bear Hill Rd., Waltham, Mass. The company manufactures medium size digital com-



puters, general purpose computers, and designs and implements automation plans. David O'Brien has been appointed district manager.

Bunker Ramo to Build New Connecticut Plant

STAMFORD, Conn. — The Bunker Ramo Corp. will build a 300,000 sq. ft. facility in the Merritt Parkway Industrial Park, at Trumbull. E.L. Schmidt, vice president and general manager, said the company's plans had been approved and that purchase of the property and construction of two new buildings would now begin. Included in the complex will be a new data communications center to provide data services to the financial community and other industries.

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360 'Extractors' Check Efficiency Of Programs

PALO ALTO, Calif. — Use of 4K and 8K "extractors" to monitor System 360 operation running under OS 360 is the basis for measuring efficiency of programs and computer configurations in two proprietary software packages just announced by Boole & Babbage, Inc.

Hank Cureton, technical specialist for the firm, told *Computerworld* that the 8K extractor watches over the activity of the whole configuration. It checks the movement of the system and various components such as console typewriters and disks, using the table stored in the operating system. Checks can be taken every 16 milliseconds and it is estimated by the firm that they do not take up more than 1% of normal run time. An analysis run is made to determine a measure of relative efficiency for the system under study and, more importantly, allows for the pinpointing of possible improvements. "We have found for instance, that the console typewriter and its associated operating system software are often the cause of inefficiency," Cureton said.

Program Monitoring

In the monitored configuration, the 8K extractor program runs in a section by itself. However, where specific program monitoring is required, the extractor is only 4K and runs in the same partition with the program. The data sets created by the extractor are analyzed later and, if the user wants them, a number of data sets can be combined to provide an average utilization picture.

Priced at \$7500

The price of the packages is \$7500 for either the configuration utilization package or the problem program efficiency package. Both can be obtained for \$12,500. Two and three year lease arrangements are also available. Deliveries of the first systems were made two months ago and maintenance is available under contract.

Gallagher Is Linked To Scandal Figure By Life Magazine

NEW YORK — *Life* magazine renewed its attack on Rep. Cornelius Gallagher (D-N.J.) last month with a two page article in its Oct. 25 issue detailing Gallagher's connection with "Tino" De Angelis. Gallagher was a leader in the successful fight against a national data bank.

De Angelis was the key figure in the 1963 salad oil swindle that cost Wall Street financiers approximately \$150 million in defaulted loans backed by phony receipts for soybean oil supposed to be in Bayonne, N.J., storage tanks.

According to *Life*, Gallagher, a lawyer, received, just prior to 1963, approximately \$50,000 in legal fees from De Angelis enterprises that later that year ended in bankruptcy.

The next year, *Life* said, Gallagher's signature was used to guarantee a loan to some of De Angelis' associates, with receipts again used as collateral. This time the receipts were for cargo allegedly aboard ships.

However, *Life* said, FBI and other investigators found that on days when some of the ships were supposedly loaded, they had not even docked.

Although Gallagher has threatened to file suit against *Life*, the magazine stated that as the Oct. 25 issue went to press, he had not yet done so. Gallagher has denied the *Life* charges and said he is the victim of a political smear.

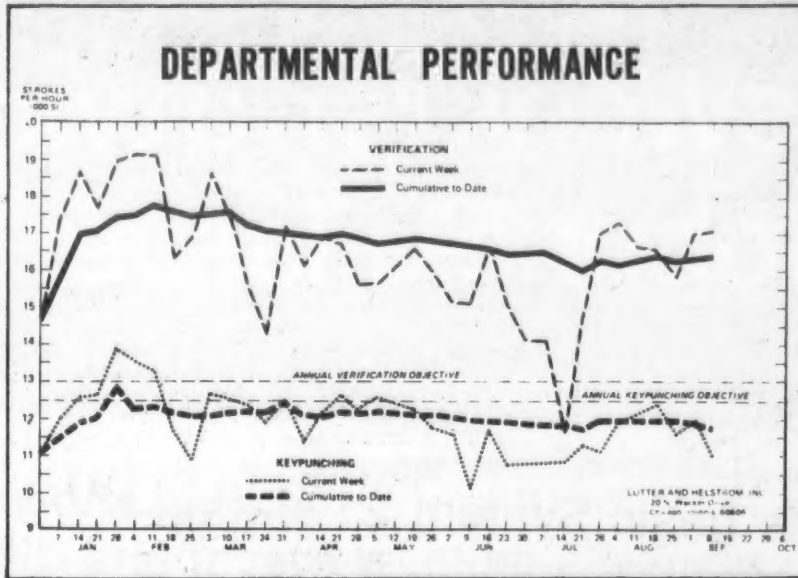


Chart showing the use of the output from the Keypunch Performance System programs described at right.

Keypunch Operator Efficiency Checked By a New System

CHICAGO — A new Cobol-based system for measuring keypunch and verification operator performance and so leading to improving keypunching output has been announced by Lutter and Helstrom, Inc. Named the "Keypunch Performance System" by the firm, the new system measures the weekly work performance for each operator's keypunching and verification operations against standards for an organization's entire keypunch department. Standards are based on historical strokes per job, and are subject to regular review and refinement.

"The Keypunch Performance System has been in operation at the Bell & Howell Co. since Jan. 1, and has proven to be of increasing benefit to the user," states Frederik H. Lutter, president of Lutter and Helstrom. (See chart on left.)

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As a result, because of the slow speed of the impact printer and the frustrations of inundating your company in more paper, people in your organization who should be getting daily computer reports get them every few days, or weekly, or not at all.

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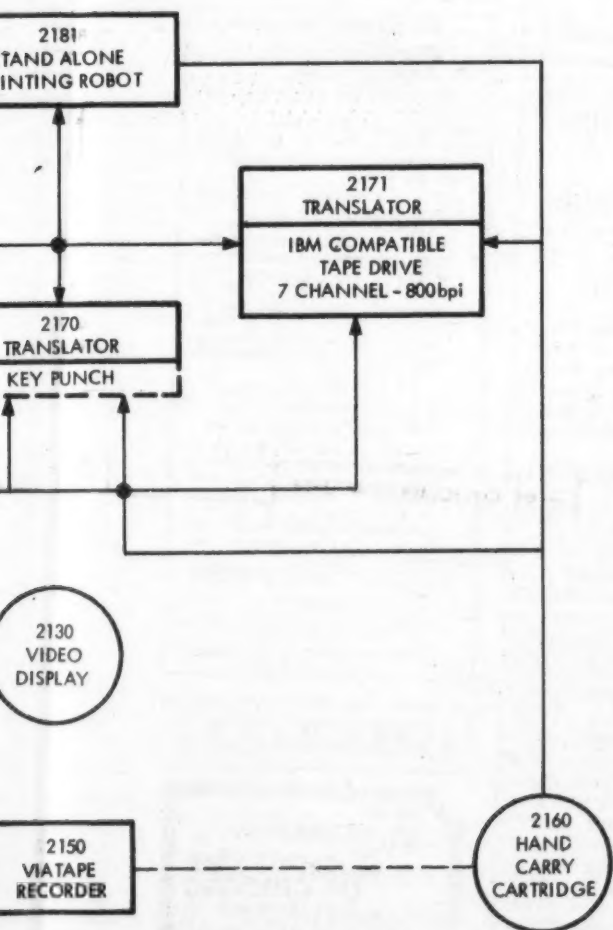
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2111	Data channels (max. of 2 per microprocessor)	\$ 1.00 ea.*
2120	Keyboard (requires 1 data channel) (Model 2111)	\$ 5.00*
2130	Video display (max. of 2 per microprocessor)	\$ 5.00*
2140	RF modulator (max. of 2 per microprocessor — each capable of supporting one commercial TV set)	\$ 7.50
2141	RF modulator (max. of 2 per microprocessor — each capable of supporting 2 to 12 commercial TV sets)	\$ 23.00
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2170	VIATAPE cartridge to card and card to VIATAPE cartridge translator	\$100.00
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2180	VIATRON printing robot (requires 1 Model 2111 data channel)	\$ 20.00
2181	VIATRON stand-alone printing robot	\$ 48.00
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MORE BUY SELL SWAP
ON PAGE 16.

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NEW YORK - The first official manual for the
newly standardized Cobol language will not be
ready until early next year, Alexander C. Grove,
Bema/DPG, has told *Computerworld*.

However, it has been learned that the book, when
published, will not cost more than \$4 for a single
copy, and that discounts for volume orders will be
available. Earlier rumors were that the book would
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Dr. Herbert Grosch of the National Bureau of
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Burroughs, NCR Earnings Up for Quarter, 9 Months

DETROIT — Burroughs Corp. has reported third quarter earnings of \$7,654,000 (93 cents a share) on revenue of \$150,887,000, up from last year's third quarter earnings of \$6,114,000 (75 cents a share) on revenue of \$131,968,000.

Nine month earnings were \$23,400,000 (\$2.85 a share) on revenue of \$450,097,000, compared with last year's first nine

month earnings of \$19,187,000 (\$2.35 a share) on revenue of \$380,843,000.

Burroughs President Ray W. Macdonald said that orders for commercial electronic data processing systems were 72% ahead of the same period in 1967.

Macdonald further indicated that total worldwide backlogs continued to grow and are currently 41% greater than they were at the beginning of the year.

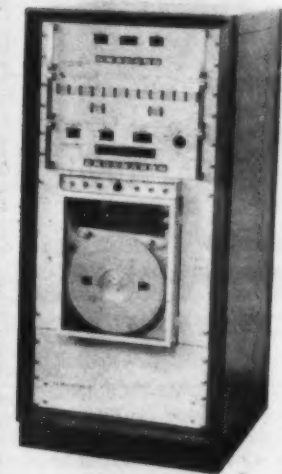
NCR Earnings Also Up

DAYTON, Ohio — The National Cash Register Co. has reported third quarter earnings of \$9,330,000 (\$1 a share) on revenue of \$267,814,000, up from last year's third quarter earnings of \$8,748,000 (94 cents a share) on revenue of \$245,048,000.

Nine month earnings were \$23,239,000 (\$2.48 a share) on revenue of \$776,579,000, compared with earnings of \$21,841,000 (\$2.35 a share) on revenue of \$712,453,000 during last year's first nine months.

"While most major lines of products are experiencing increases, the strong demand for the recently introduced NCR Century Series computer family is having an especially favorable effect on incoming business," NCR Chairman Robert S. Oelman said.

One reason earnings growth has not matched sales growth was the unusually heavy expenses associated with the introduction of the Century series, he said.



The Model 100M DATALOGGER is designed to digitize and record on magnetic tape information from sources such as mass inspection techniques, the investigation of soil mechanics, and medical phenomena.

- Scanning speed 10 to 100 channels per second.
- 100 channels of 2 wire input.
- Integrated circuit design.
- Accurate digital measurement down to a few millivolts.
- Resolution to 5 microvolts.
- Recording density is 200 BPI.
- Recording speed is 200 characters per second.

OPTIONS AVAILABLE

- Scanning speed to 400 channels per second.
- Resolution to 1 microvolt.
- Recording density 556 or 800 BPI.
- Programmed range discrimination.
- Recorder uses 7 or 9 track IBM compatible tape.

Price: Basic 100M — \$12,000.

Phone or write J. P. Crowley:

ANALOG DATA SYSTEMS, INC.
DATA ACQUISITION AND SWITCHING SYSTEMS

Control Data Earnings Down Sharply in Its 3rd Quarter

MINNEAPOLIS, Minn. — Control Data Corp. has reported sharply lower earnings for the third quarter, with the recently acquired Commercial Credit Co. blamed for most of the decline.

Earnings were \$10.9 million (76 cents a share), down about 12% from last year's third quarter earnings of \$11.8 million (87 cents a share). While Control Data's own earnings dropped from \$4.3 million to \$4.2 million, Commercial Credit's earnings fell from \$7.5 million to \$6.6 million, Control Data said.

Control Data Chairman William

C. Norris blamed most of Commercial Credit's lower earnings on increased money costs.

Harold H. Hammer, Control Data's financial vice president, said that Commercial Credit's 10 manufacturing subsidiaries, whose losses he expected to exceed the \$1.7 million losses in 1967, will be sold "in an orderly fashion."

Future Looks 'Favorable'

Norris said that the fourth quarter looked "favorable" because of "a continuing rise in the compu-

ter related business" and a recent decline in money costs.

Norris said that Control Data's August acquisition of Commercial Credit has "many significant implications" in that it will make a large reservoir of money available for computer leasing. It is also expected to provide a broad earnings base from which to launch Control Data's 7600 Series computer program next year, he said.

The firm also disclosed that it has changed the start of its fiscal year from July 1 to Jan. 1.

New Electronic Financial Newswire Begun

By a CW Staff Writer

NEW YORK — A new electronic newswire service to provide a continuously updated 10 minute capsule of general and business news developments affecting the financial community has been introduced.

Called the UPI-Bunker-Ramo Newswire, the service originates at United Press International editorial offices and is displayed at subscriber locations by the Bunker-Ramo Corp.

Displayed on CRTs

The text can be displayed on large electronic screens for group viewing and on desk top CRT devices that can also be used for obtaining stock quotations and other market data from a central computer.

Bunker-Ramo said that it currently leases about 16,000 terminals in the United States capable of receiving the news service.

The firm, which provides similar display facilities for the Dow-Jones News Service, said that both newswires can be displayed simultaneously on the same equipment.

Among the services available, in addition to the two newswires, he said, were real-time ticker tape quotations; Teletrend Service, providing information in six categories about the 10 most active stocks; and information about highs, lows, last bid-asked prices, dividends, and recent movements of selected stocks.



Bunker-Ramo Vice President A.A. Barnett [left] and UPI President Mims Thomason [right] stand by a Bunker-Ramo Teletrend 70 CRT terminal capable of displaying the new UPI-Bunker-Ramo Newswire.

Buying Over Priced Stock Can Be Costly, Broker Says

By Kenneth Troy

Of Filor, Bullard & Smyth

Unless your capital is unlimited, or you just plain don't care, one of the basic questions before you buy a stock today should be: "What can I lose?"

Here are a few of the more dramatic answers to that question based on the activity of recent months.

Mohawk Data Science, at its high of 111 in July, was selling at 220 times current earnings. The insanity of that multiple must have begun to penetrate the euphoria surrounding some of the stock's owners, and it began to slip slowly, week by week, with occasional rallies.

The bad news hit Oct. 4. Mo-

hawk's biggest customer, National Cash Register, asked the company to curtail its deliveries of tape recorders. The stock took a 12 point dive.

Had you asked yourself in July what you could lose by buying Mohawk, your answer could now be a big, round 50 points.

A bad example? Too dramatic? Perhaps. So let's look at the top two ranking long term growth stocks in America today — IBM and Xerox.

IBM was around 370 a few months ago. When the government recently dropped a gentle hint that it might ask the company to get rid of its time sharing business, the stock dropped 10 points in one day.

What could you lose in IBM since June? Here's another 60 point answer.

Several weeks ago, Xerox was again nudging the 300 level. Then came news of the impending merger with CIT Financial. Your loss in Xerox could have been 40 points in less than a week.

Ask What You May Lose

The simple point is that when you run in to buy a stock today at 50 to 100 times earnings, and up, you are taking an expensive risk. And when the risks prove to be as

great as they have been in stocks that you would classify as quality-growth, the size of the risk in many of the flimsier flyers should be enough to give a severe case of acrophobia.

Records and near records in volume and the averages make interesting enough news. What they cannot do is give you a

substantial reason for jumping in and buying stocks.

Nothing has really changed in the fundamental considerations that can affect the market adversely. All we can see is that the potential downside risk has been made greater by higher stock prices.

New Registrations

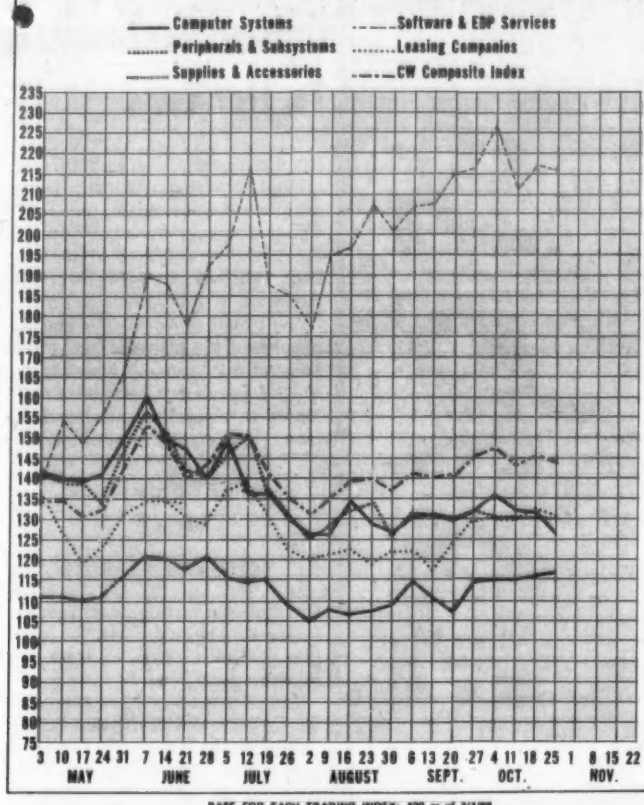
COMPUTER SYSTEMS DEVELOPMENT CORP., 711 14th St., N.W., Washington, D.C., a computer equipment lessor, has filed to register 300,000 common shares. Proceeds, with the price to be set, intended for equipment. The underwriter is Charles Plohn & Co., 200 Park Ave., New York.

INFORMATION SYSTEMS LEASING CORP., 222 S.E. Easton Rd., Glenside, Pa., a developer of a computer based management system, has filed to register 100,000 common shares. Proceeds, at \$5 per share, intended for debt repayment, working capital, and other corporate purposes. The underwriter is Mayflower Securities, Co., Inc., 32 Broadway, New York.

PROGRAMMING METHODS, INC., 51 Madison Ave., New York, a company providing computer systems analysis and programming services, has filed to register 88,000 common shares. Proceeds, at a maximum of \$6 per share, intended for expansion and working capital. The underwriter is Michael G. Kletz & Co., Time-Life Bldg., Rockefeller Center, New York.

SSI COMPUTER CORP., 3333 California St., San Francisco, a computer equipment lessor, has filed to register 400,000 common shares. Proceeds, with the price to be set, intended for equipment. The underwriter is Glore Forgan, Wm. R. Statz Inc., 45 Wall St., New York.

Computer Stocks Trading Index



4 of 5 CW Indexes, Composite Down

By the CW Financial Staff

Computerworld's Computer Systems index took a major 5 point (3.79%) drop to 127 for the week ended Oct. 25 as the stock market in general eased off. Only the Supplies & Accessories index and the American Stock Exchange price index closed up.

The Leasing index took the second biggest loss, closing down 2 points (1.51%) at 131. The Peripherals & Subsystems index finished off 1 point (0.77%) at 130, with the Software & EDP Services index also down 1 point (0.46%) to 216.

The Computerworld Composite Average closed off 2 points (1.37%) at 144.

Other Major Indexes

The Dow-Jones industrial average closed at 961.28, off 6.21 points (0.64%); the Standard & Poor's industrial average, 113.86, down 0.64 (0.56%); the New York Stock Exchange composite average, 58.63, off 0.28 (0.48%); the American Stock Exchange price index, \$30.99, up 4 cents (0.13%); and the N.Q.B. over-the-counter industrial average, 413.70, down 5.59 (1.3%).

More CW Stocks Down Than Up

Of the Computerworld listed stocks, 34 closed up for the week, 58 dropped, and 9 were unchanged, versus the previous week's 50 advances, 42 declines, and 7 unchanged.

Overall on the NYSE, 772 issues were up, 812 down, and 122 the same.

Computerworld listed stocks closing at new highs for the year were Baltimore Business Forms, 22, up 3/4 (1.14%); Nashua Corp., 83, up 3-5/8 (4.56%); and Computer Network, 64, up 5 (8.47%).

No Computerworld listed stocks dropped to new lows, nor were any among the 20 most

active issues on the NYSE.

The Dow-Jones industrial average made a modest gain Oct. 25 to ease part of its loss from a yearly high the Friday before.

Current Outlook Optimistic

In spite of the loss, analysts apparently think that the general upward gain since a low in early August will continue for a while even if the Vietnam peace talks don't produce results soon. Their optimism is based on the surprising vigor of the economy.

Even if setbacks in peace talks bring about a decline, many analysts foresee it as brief, cushioned by selective bargain hunting. This view is backed by currently strong consumer spending, indications from third quarter company earnings that fears of a profit squeeze may have been overly pessimistic, and by a large amount of investable cash held by institutional investors.

Mutual funds had a cash reserve of \$3.74 billion (7.3%) at the beginning of October, up from 7.1% at the beginning of September and 6.6% at the beginning of August, and they are under pressure to get at least some of that money reinvested. Funds usually work with a cash position of 5% to 6%.

In the event that the peace talks do produce some results soon, cash heavy funds could spark a scramble for stock that would push the market up.

Long Range Outlook Uncertain

Just how long the strong economic picture will last is anyone's guess, what with the economy still expected to slow down in next year's first half.

However, technical analysts seem to think that any market drops in the near future can be headed off in the 930-940 range, although some are using 920 as the support level.

COMPUTER STOCKS: TRADING SUMMARY

Week Ended October 25, 1968

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	163 3/8	239-157	219 3/4	Burroughs	- 2 5/8	- 1.19	+ 34.50
NYSE	67 3/4	110- 54	63 1/8	Collins Radio	+ 1 1/2	+ 2.43	- 6.83
NYSE	101 1/2	174- 95	141 5/8	C-control Data	- 2 1/8	- 1.48	+ 39.53
AMSE	102	160- 95	136	Digital Equipment	- 8 1/2	- 5.88	+ 33.33
NYSE	87 1/4	100- 81	95 7/8	General Electric	- 3/4	- 0.80	+ 9.59
NYSE	60	91- 59	81 3/4	Hawlett-Packard	+ 1/4	+ 0.31	+ 36.25
NYSE	93 1/8	144- 89	119	Honeywell	- 6 1/8	- 4.90	+ 27.78
NYSE	288 1/2	375-280	316 3/4	IBM	- 10 1/4	- 3.13	+ 9.89
NYSE	103 7/8	153- 40	124 1/2	National Cash Register	- 1 5/8	- 1.29	+ 19.85
NYSE	46 7/8	55- 44	46 7/8	RCA	- 1/4	- 0.53	-
NYSE	89 1/8	53- 34	45 1/4	Raytheon	- 1 7/8	- 3.98	+ 15.65
OTC	22 1/2	66- 20	41	Scientific Controls Corp.	- 2	- 4.65	+ 82.22
AMSE	78 3/4	114- 72	81 1/8	Scientific Data	- 2 3/4	- 3.28	+ 3.01
NYSE	45	63- 42	43	Sperry Rand	- 1 1/4	- 2.83	- 4.45
AMSE	22 1/2	39- 20	27 3/4	Systems Engineering Labs.	- 1 3/4	- 5.93	+ 23.33
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	58 3/8	91- 52	85 1/2	Addressograph-Multigraph	-	-	+ 46.46
OTC	21	85- 45	51 1/2	Alphanumeric	- 12	- 16.90	+145.24
NYSE	29	38- 26	34 1/4	Ampex	- 3	- 8.36	+ 18.10
OTC	17 1/4	27- 15	16 1/2	Bolt, Beranek & Newman, Inc.	- 1/2	- 2.94	- 4.35
NYSE	13 1/2	20- 12	16 7/8	Bunker-Ramo	- 1 1/8	- 6.25	+ 25.00
AMSE	32 1/8	50- 27	35 1/2	Calcomp	+ 1/8	+ 0.35	+ 10.51
OTC	24 1/2	49- 20	35	Cognitronics	- 3	- 7.90	+ 42.86
OTC	12	18- 10	15 1/2	Computer Equipment	-	-	+ 29.16
OTC	15 1/4	23- 13	18	Data Products	+ 3/4	+ 4.35	+ 18.03
OTC	19 1/4	27- 16	18	Digilronics	- 1	- 5.26	- 6.49
OTC	39	57- 32	48	Electronic Memories	+ 1/2	+ 1.05	+ 23.07
OTC	10	29- 9	13 1/4	Fabri-Tek	- 1/4	- 1.86	+ 32.50
OTC	17	35- 14	32 1/2	Gerber Scientific	-	-	- 4.48
OTC	12 1/2	26- 10	22	Information Displays	+ 2	+ 10.00	+ 76.00
AMSE	16 7/8	52- 14	28 3/4	Milgo Electronics	- 5 1/8	- 15.18	+ 70.37
AMSE	57 1/2	108- 54	65 3/4	Mohawk Data Sciences	- 2 3/8	- 3.49	+ 14.35
OTC	74	145- 71	135	Optical Scanning Corp.	- 10	- 6.90	+ 82.43
OTC	18	42- 16	33 3/4	Photon	- 3 1/4	- 8.79	+ 87.50
AMSE	25 5/8	38- 12	29	Potter Instrument	+ 7/8	+ 3.11	+ 13.17
OTC	40 1/4	99- 38	89	Recognition Equipment Corp.	- 1	- 1.13	+121.12
AMSE	16	29- 14	22 1/4	Ricon Electronics	+ 7/8	+ 4.09	+ 39.06
NYSE	46 1/8	66- 42	49 3/4	Sanders	- 3/4	- 1.49	+ 7.86
OTC	47	155- 53	65	Scan-Data	-	-	+ 38.29
OTC	40 1/2	51- 35	37	Tally Corp.	- 1/2	- 1.34	- 8.64
NYSE	242 1/4	321-229	270	Xerox	-	-	+ 11.45
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	48 1/2	64- 37	43 3/4	Acme Visible	- 1/4	- 0.57	- 9.79
NYSE	20 1/2	32- 18	19 3/8	Adams-Morris	-	-	- 5.49
OTC	13 5/8	22- 13	22	Baltimore Business Forms	+ 3/4	+ 1.14	+ 61.47
AMSE	27	44- 21	30 7/8	Barry Wright	+ 2 1/8	+ 7.39	+ 14.35
OTC	31 1/4	40- 26	38	Data Documents	- 3/4	- 1.94	+ 21.60
OTC	14 1/2	22- 10	21 1/2	Datatab	- 1/2	- 2.27	+ 48.27
OTC	27 1/4	38- 26	34 3/4	Ennis Business Forms	-	-	+ 27.52
NYSE	84 1/8	119- 81	108 7/8	3M Company	+ 2	+ 1.87	+ 29.42
NYSE	58	93- 48	82 1/2	Memorex	- 6 1/2	- 7.31	+ 42.24
OTC	27 1/4	32- 25	29	Moore Business Forms	+ 1/2	+ 1.75	+ 6.42
NYSE	57 1/4	83- 47	83	Nashua Corp.	+ 3 5/8	+ 4.56	+ 44.98
OTC	31 1/4	56- 40	45	Reynolds & Reynolds	+ 1 1/2	+ 3.45	+ 44.00
OTC	34 1/2	35- 24	28 3/4	Standard Register	+ 1/4	+ 0.87	- 16.67
NYSE	37 3/4	44- 30	31 1/8	Uarco	- 7/8	- 2.74	- 17.55
AMSE	14 1/4	23- 13	20 3/4	Webash Magnetics	- 1/2	- 2.36	+ 45.61
OTC	25 3/4	36- 24	33	Wallace Business Forms	+ 3/4	+ 2.32	+ 28.15
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	25- 7	16 3/4	Advanced Computer Techniques	+ 1	+ 6.34	+123.33
OTC	17	34- 14	33	Applied Data Research	- 1 1/2	- 4.35	+ 94.12
OTC	15 1/2	24- 13	14	Artes	-	-	- 9.66
AMSE	47	64- 42	62 3/4	Automatic Data Processing	- 1 1/4	- 1.95	+ 33.51
OTC	4	19- 4	11 1/2	Automation Sciences	- 2	- 14.82	+187.25
OTC	4 1/2	23- 3	17	Brandon Applied Systems	- 2	- 10.53	+277.78
AMSE	22 7/8	43- 20	21 1/4	Computer Applications	- 1/2	- 2.30	- 7.11
OTC	5	15- 7	10	Computer Environments	- 2 1/2	- 20.00	+100.00
OTC	30	64- 24	64	Computer Network	+ 5	+ 8.47	+113.30
AMSE	40	64- 36	57 1/8	Computer Sciences	+ 1 3/8	+ 2.47	+ 42.81
OTC	39	62- 28	33 1/2	Computer Usage	-	-	- 14.12
AMSE	36 1/2	73- 36	72 1/4	Computing & Software	+ 6 1/4	+ 9.47	+ 97.94
OTC	12 1/2	39- 10	39	Datamation Services	+ 2	+ 5.40	+ 12.00
OTC	12 1/2	20- 9	11 3/4	Digitek	- 1 1/4	- 9.62	- 6.00
AMSE	38 3/8	52- 36	30 1/4	Electronic Computer Prog. Inst.	- 3/4	- 2.42	- 21.18
OTC	35	68- 32	64	Informatics	- 2	- 3.04	+ 82.85
OTC	21	28- 14	16	Matrix Corp.	- 1 1/2	- 8.57	- 23.81
OTC	11 1/2	69- 8	62	National Computer Analysts	+ 4	+ 6.89	+439.13
AMSE	37	51- 28	51 5/8	Planning Research	+ 5/8	+ 1.23	+ 66.53
OTC	113 1/4	144- 13	14 1/4	Programming & Systems	+ 1	+ 7.55	+ 7.55
OTC	9	15- 8	8 1/4	Software Systems	- 1/4	- 2.95	- 8.33
OTC	20 1/2	22- 11	12 1/4	TBS Computing Centers, Inc.	+ 1/2	+ 4.25	- 40.25
OTC	12	12- 12	12 1/4	United Data Centers	+ 1/4	+ 2.00	+ 2.00
OTC	63	165- 57	158	University Computing	+ 2	+ 1.28	+150.79
OTC	20	36- 20	32 1/2	URS Systems Corp.	- 4	- 10.96	- 10.96
OTC	30	30- 24	24	U.S. Time-Sharing	- 6	- 20.03	- 20.03
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	18	55- 18	55	Booth Computer	+ 4 1/2	+ 8.91	+205.55
OTC	4 1/4	24- 4	20	Computer Exchange	+ 4	+ 25.00	+344.44
AMSE	25 1/8	36- 21	25 5/8	Computer Leasing	+ 1/8	+ 0.49	+ 1.99
OTC	12 1/4	19- 11	12 3/4	Cyber-Tronics	- 1	- 7.28	+ 4.08
AMSE	106 5/8	184- 88	110	Data Proc. Financial & General	- 3 1/4	- 2.87	+ 3.16
OTC	12 1/2	17- 8	9 1/2	Datron Rental	- 1/4	- 2.57	- 24.00
OTC	20	59- 18	47 1/2	Dearborn Computer	- 2 1/2	- 5.00	+137.50
OTC	13 1/8	19- 12	15 7/8	DEPA, Inc.	+ 1 1/8	+ 7.62	+ 19.81
AMSE	28 3/4	43- 27	29 3/8	Greyhound Computer	- 7/8	- 2.90	+ 2.17
AMSE	28 1/8	69- 36	49 1/2	Granite Equipment Leasing	- 3/4	- 1.50	+ 76.00
AMSE	49	116- 41	114	Lasco	+ 1 3/4	+ 1.55	+132.65
OTC	5	14- 5	10	Lectro Computer Leasing	+ 1/4	+ 2.56	+100.00
AMSE	30 3/4	66- 27	62 1/8	Levin-Townsend Computer Corp.	- 3 5/8	- 5.52	+102.03
OTC	10 1/2	16- 7	8 1/4	LMC Data, Inc.	- 3/4	- 8.34	- 21.43
OTC	10 7/8	16- 10	15 5/8	Management Assistance	- 1/2	- 3.13	+ 43.67
AMSE	41 5/8	53- 25	39 7/8	National Equip. Rental	- 5/8	- 1.55	- 4.21
AMSE	38	64- 35	45	Randolph Computer Corp.	- 3/4	- 1.64	+ 18.42
OTC	10 1/2	53- 10	44	System Capital Corp.	- 7	- 13.73	+319.04
AMSE	10 7/8	22- 10	21 3/8	U.S. Leasing	+ 1/4	+ 1.18	+ 96.59

— Since 10/18/68

*Companies included in Computerworld's stock trading index for each sector.

EDPromotions

OF	PROMOTED TO	WAS
David B. Tudor	Computer Sciences Div. Computer Sciences Corp. Los Angeles	Manager Colorado Springs Facility Senior Member Advisory Staff
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Herman H. Hanink	Electronics Div. General Dynamics Corp. Rochester, N.Y.	General Manager General Manager Electro Dynamic Ops. Avenel, N.J.
William J. Finnegan	Honeywell EDP Wellesley Hills, Mass.	Sales Manager Melbourne, Australia Manager Sales Training
Irving Hirschberg	Fairchild Space & Defense Systems Div. Syoset, N.Y.	Associate Director Electronic Data Systems Section Manager Digital Equipment Section
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J.A. Curtis	NCR Dayton, Ohio	Assistant Vice President Domestic Marketing Div. Director Product Sales
Karl Kozarsky	RCA New York	Director Computers and Telecommunications Manager Computers and Communications
T.D. Caswell	Astro-Science Corp. Austin, Texas	President Executive Vice President
William Abourezk	Systems Group TRW Inc. Redondo Beach, Calif.	Manager Electronic Data Systems Lab. Assistant Manager



D.B. Tudor



R.D. Gentry



H.H. Hanink

Port RR Buys 2 Univac Systems To List Cars

Terminal Railway, Mobile, Ala., has purchased a Univac 9300 and a 9400 computer, six visual communications terminals, and four direct access storage subsystems for the development of a real-time railroad car inventory. Installation is scheduled for 1969.

The University of California has purchased a Control Data 1700 computer system for installation at its Lawrence Radiation Laboratory to be used to monitor data from long term environmental

Orders and Installations

and material testing experiments. Remote terminals will be employed. Installation is scheduled for this fall.

Ultra Electronics Ltd., London, has ordered a Honeywell 1250 computer for inventory control, production scheduling, cost control, and administrative accounting.

The Joint Chiefs of Staff Message Center, Washington, D.C., has installed two Farrington 3030 optical character page readers for the purpose of preparing military communiques for daily transmission. The center coordinates worldwide communications for the Joint Chiefs of Staff, the Office of the Secretary of Defense, and the Defense Intelligence Agency.

The Nottingham Cooperative Society, London, has ordered an NCR Century 100 computer system for accounting and stock control applications, including such functions as share accounting, small savings, trade ledger and departmental transfers, rental and budget accounts, and payroll. Included in the system are a 32,000 character memory, two disk units, paper tape reader, printer, and two magnetic tape encoders.

Glass Tape Reel Designed for High Stability, Accuracy

A glass precision tape reel made of chemically strengthened glass has been designed for computer operations where high dimensional stability and accuracy of reels is important. The reel is



reported to exhibit greater strength than aluminum or plastic reels and will not warp or bend even under extreme environmental conditions. The glass flanges will not dent and if squeezed together will return to shape. The strength of the glass flanges reduces flange deflection and protects tape edges and recorded data. Optical Products Dept., Corning Glass Works, Corning, N.Y. 14830.

Duplex Terminal

A new version of the Univac 0707 card reader communications terminal has full duplex capability to enable data transfer from the terminal to be controlled by a central processor either on a character by character basis or on a card by card basis. The improvement over the half duplex version makes the 0707 suitable as an input terminal for computer time sharing centers. Depending upon requirements, the unit can read column by column in the incremental mode at up to 25 cards per minute, or 40 cards per minute in a continuous mode. The card reader, which holds 500 cards at a time, is 20" in width, 12" high, 8" in depth, and weighs 25 pounds.

Sperry Rand Corp., Univac Div., P.O. Box 8100, Philadelphia, Pa. 19101.

Digital Coupler



A new digital coupler will record data from digital instruments on any one of eight different output devices by replacement of circuit cards. Basically the coupler is a digital translator which accepts data from instruments with digital outputs, stores the data, translates it from parallel entry code to serial form, and

transfers the data to the output recording device in the code required by that device. The coupler accommodates up to six inputs at a time, 10 characters per instrument, and can also be operated asynchronously. With other plug-in options, data can be entered manually and time of day information can be added. Prices start at \$4150, and delivery is normally eight weeks from receipt of order. Hewlett-Packard Co., 1501 Page Mill Rd., Palo Alto, Calif. 94304.

Computer Forms

A new continuous form, Wal-Lok, uses a patented gluing method for trouble free feeding of as many as eight plies at maximum speed of line printers. It is

New Products

claimed that the form will not bunch or "tent" in the printer. Tests of the new form have been reported as highly successful at maximum computer printer speeds. The company recommends use of eight plies for the present. Deleaving can be accomplished by any conventional method, including power decolorator with power trimmer, manual stub removal, or unit set carbon removal by perforating paper parts in the fastened stub. Wallace Business Forms, Inc., 35 E. Wacker Dr., Chicago, Ill. 60601.

Army Orders Personnel Measurement System Study

WASHINGTON, D.C. — The Army's Office of the Deputy Chief of Staff for Personnel is funding a study by Behavior Science Corp. to determine the feasibility of developing a personnel measurement system for Army civilian employees. The project will include the possibility of creating valid evaluation techniques both for measuring the performance and for predicting the future success of the Army's "upper middle" level managers in civil service grades GS 13 through 15.

Switching System

SAN MARINO, Calif. — The Federal Reserve System has approved a \$2,756,835 contract

Correction

George R. Trimble, Jr. has been elected a vice president and board member of Penta Computer Assoc., Inc., New York. In the Oct. 9 issue it was incorrectly stated that he had assumed these positions with Computer Usage Co., Inc., where he was formerly corporate director of technology.

CONTRACTS

for Marshall Communications, a Marshall Industries affiliate, for delivery, installation, and maintenance for five years of a data communications system to be located at Culpepper, Va. The system will interconnect all 12 Federal Reserve banks, their 24 branches, offices of the Board of Governors in Washington, D.C., and the U.S. Treasury Dept. Service is scheduled to begin in late 1969 or early 1970.

Systems Support

LOS ANGELES — The Jet Propulsion Laboratory has awarded Planning Research Corp. a contract for continued real-time computer systems support on the Mariner project.

MV Automation Study

WASHINGTON, D.C. — The District of Columbia Department of Motor Vehicles has issued Compress, Inc. a contract for an

automation study to improve its driver permit and registration service. The new system will include remote visual display devices with an associated printer and keyboard connected to the computer, and an automatic checking feature to contain the names of persons whose permits have been

suspended or revoked or who are temporarily or permanently ineligible. Information will be available for police department as well as district court use. The Department of Transportation will underwrite 50% of the study cost as part of a highway grant-in-aid project.

H-200, 1410, 1401 FOR SALE

IPS has several small- and medium-size IBM and Honeywell systems for sale and delivery in the near future. A Honeywell 32K system with four 44KC tapes is available for March, 1969 delivery on sale or lease basis. IBM 1410's available include an 80K with 2302 disc and 7330 tapes and a 40K with 1402, 1403, and five 729 V's. Among the 1401's (all with 1402, 1403) are a 12K with four 7330's, and two 4K's, one with a 7330. 1440 16K 3-1311 also available. For prices, delivery, and details, please call or write.

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Attachments Ban Revised Second Time

(Continued from Page 1)

tion of customer owned terminal devices to the telephone network. Those tariffs, scheduled to go into effect Nov. 1, had been criticized severely by various organizations and the Justice Department.

AT&T also requested that all the new tariffs become effective Jan. 1 in an effort to provide continuity.

Carterfone Not Affected

Not affected by the request for delay is the inductive or acoustic connection of private mobile radio systems to the telephone network. The connection of such systems, and other customer owned devices and systems, was made possible by an FCC ruling in June that the telephone companies' foreign attachment bans were unlawful [CW, July 10].

As *Computerworld* went to press, the FCC had not ruled on either the new tariffs or the requested implementation delay.

An AT&T spokesman said that the delay to Jan. 1 in implementing the tariffs was necessary to provide time needed to coordinate changes required for intrastate changes brought about by interstate changes, and also to provide additional time for comments.

IBM Announces Standard Cobol Compiler Series

(Continued from Page 1)

piller will continue to operate for an additional year.

95% Conversion

Two language conversion programs are being made available, a 14K one for DOS users, and a 17K one for OS users. These will produce a 95% conversion for programs which adhere to the IBM Cobol manuals and which compile and execute correctly on the current compilers.

Documentation currently available includes language specifications for both compilers (C24-6394 for DOS, C24-6396 for OS) and a single Cobol Differences manual (C28-6395).

(A related story appears on page 10.)

Meetings

DPMA Meeting
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With an MBA in Marketing, Art has had an extensive career in IBM involving both field sales and headquarters marketing staff responsibilities. His sales experience led to the position of market planner for IBM's Western Regional Office and subsequently to the Data Processing Division's Planning Department. John joined IBM as an Applied Science Representative after receiving an MS in Engineering. He subsequently held positions as Manager of Systems Engineers and Manager of the IBM Education Center serving Southern California and the Southwestern States.

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Conference Revitalizes Idea That Computer Is a 'Brain'

WASHINGTON, D.C. — The concept of a computer as being some type of a brain came back with a bang during the conference on the Law of Software here.

First, the commissioner of patents brought the idea up with his new guidelines based on the idea that a program could be a "process which can be performed solely by mental acts" and as such would be unpatentable. This has been the Patent Office position for some time.

Then Professor Kayton, director of the patent law program at George Washington University, presented a definition of the computer as an apparatus for simulating the human mind — and said that if it weren't, no one would want it.

Kayton was only one of the speakers who took issue with the commissioner's guidelines. Howard Popper of Bell Telephone opened his speech on "Methods and Claims for Protecting Programmable Processes" by threatening to sit down as "the commissioner has just said they don't exist." However, he continued, and, judging by his reception by the audience, it appeared unlikely that many people felt that he was wasting their time.

Guidelines Under Attack

Discussions with participants revealed that most expected that the guidelines would be torn to pieces

by the courts before any new patent applications are decided, so that practitioners will continue to file for software patents, although they may continue to disguise the fact by casting the application in phrases covering hardware. This apparently has been the practice for some time, although little official acknowledgement has been given. It was also said that the Patent Office had changed its method of handling software cases after the publicity given to the Goetz patent by *Computerworld* [CW, June 19]. "There's no bargaining with them now," was one comment, "so there are a number of cases going to appeal."

Other participants regretted that the panel had been one sided, with no one showing why computer programs should be regarded as something special, or as not being suitable for patent protection. However, as news spread that IBM speakers had been invited but had not accepted, it was felt that the blame did not lie with the conference organizers.

One participant suggested that it was only poetic justice that it was one sided. "It was even more one sided when the President's Commission started all this nonsense that computer programs should be unpatentable," he said. "The sole industry representative was an IBM vice president — and look how close the IBM position was reflected in the commission's findings."

'Fail-Safe' Systems Suit Is Dismissed

By a CW Staff Writer

LOS ANGELES — The Los Angeles welfare suit, in which a group of welfare recipients and a taxpayer asked the court to order "fail-safe systems" [CW, Oct. 2], was thrown out by the Superior Court here.

Judge Robert S. Thompson gave the plaintiffs permission to file an amended complaint, but as yet no decision has been made as to whether they will amend the original complaint or appeal the case to a higher court. A spokesman told *Computerworld* that a mo-

tion for a new hearing might be filed, denied, and the denial appealed.

The county conceded that there is currently a greater percentage of error and delay in the year-old system than there should be, but claimed that when it is perfected there will be no more errors than occur in business and industrial operations. The plaintiffs had estimated this normal rate as 0.1% and the current error rate as between 10% and 25%. Deputy Attorney General Edward M.

Belasco, representing the State of California, said that the state was satisfied with the computer system and believed that on its ultimate completion it would result in great savings for the taxpayer.

In rejecting the petition for a writ of mandamus, Judge Thompson said, "It almost appears to me that this suit involves something of a 'death wish' on the part of the petitioners. This court does not wish to share in this suicidal tendency."



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